

ASSIGNMENT 7

Textbook Assignment: "Mechanical Systems and Plan." Pages 8-1 through 8-24. "Electrical Systems and Plan." Pages 9-1 through 9-19. "Construction Drawings." Pages 10-1 through 10-33.

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- 7-1. The system of pipes, fixtures, and appurtenances used inside a building for supplying water and removing wastes is known by what general term?
1. Mechanical systems
 2. Plumbing
 3. Water distribution
 4. Piping
- 7-2. When working with mechanical plans, you must become familiar with which of the following codes?
1. National Plumbing Code and National Electrical Code®
 2. National Plumbing Code and local NAVFAC codes
 3. Local codes and National Plumbing Code
 4. Local codes and ANSI codes
- 7-3. Copper is widely used for tubing in piping systems for which of the following reasons?
1. It is less costly than other types of pipe
 2. It is available in two wall thicknesses and is faster to install
 3. It does not rust and is resistant to scale particles in the pipe
 4. Fittings are screwed to the pipe which allows for faster completion of the piping system
- 7-4. Which of the following types of copper tubing is frequently used as replacement piping because of its flexibility?
1. Type K
 2. Type L, hard tempered
 3. Type M
 4. Type L, soft tempered
- 7-5. Which of the following advantages does plastic pipe have over metal?
1. Flexibility
 2. High resistance to rupture and total resistance to rust
 3. It can be installed either above or below ground
 4. All of the above
- 7-6. What type of polyvinyl chloride pipe can be used in both cold-water and hot-water systems?
1. PVC
 2. APVC
 3. CPVC
 4. PVC-C
- 7-7. Galvanized steel pipe sizes are based on what nominal size?
1. Inside diameter
 2. Outside diameter
 3. Wall thickness
 4. Inside radius
- 7-8. What type of fitting should be used for joining straight runs of dissimilar metal pipe that require easy disconnection?
1. Union
 2. Coupling
 3. Dielectric union
 4. Dielectric coupling
- 7-9. For what type of pipes should (a) solvent welded and (b) sweated joints be used?
1. (a) Galvanized (b) plastic
 2. (a) Plastic (b) copper
 3. (a) Plastic (b) galvanized
 4. (a) Copper (b) plastic
- IN ANSWERING QUESTIONS 7-10 THROUGH 7-13, SELECT THE TYPE OF VALVE FROM THE FOLLOWING LIST THAT BEST MATCHES THE DESCRIPTION GIVEN IN THE QUESTION.
- A. GLOVE VALVE
B. GATE VALVE
C. CHECK VALVE
- 7-10. This valve has a wedge-shaped, movable plug that fits tightly against the seat when closed.
1. A
 2. B
 3. C

7-11. This valve is well suited for use when a regulated flow is required.

1. A
2. B
3. C

7-12. This valve must be operated in the fully open position.

1. A
2. B
3. C

7-13. This valve is used to prevent backflow in a pipeline.

1. A
2. B
3. C

7-14. On water mains, thrust blocks should be installed for what purpose?

1. To prevent pipe displacement caused by high water pressure
2. To prevent pipe ruptures caused by high water pressure
3. To prevent sagging due to the weight of the piping material
4. To prevent sagging due to the weight of the pipe and the water contained in the pipe

7-15. Which of the following types of piping is becoming increasingly popular for use in underground sanitary sewage systems?

1. Cast iron
2. polyvinyl chloride
3. Concrete
4. Wrought iron

7-16. To make a 22 1/2-degree change in pipe direction, what cast-iron fitting should you use?

1. Combination Y and 1/8 bend
2. 1/4 bend
3. Short sweep 1/4 bend
4. 1/16 bend

7-17. What fittings are used in waste pipe systems to catch and hold water, thereby forming a seal to prevent sewer gases from backing up into a building?

1. Traps
2. Street ells
3. Valves
4. All of the above





7-18. In what way, if any, do waste stacks differ from soil stacks?

1. Waste stacks carry human waste, soil stacks do not
2. Soil stacks carry human waste, waste stacks do not
3. Waste stacks empty into building drains, soil stacks empty into building sewers
4. None

7-19. Under most local codes, what is the minimum distance that a building drain must extend beyond the building wall?

1. 2 ft
2. 3 ft
3. 6 ft
4. 10 ft

7-20. In a plumbing plan, which of the following symbols should be used for a hot-water line?

1. 
2. 
3. 
4. 

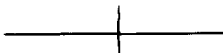
7-21. What symbol should you use to show a screwed joint in a piping plan?

1. 

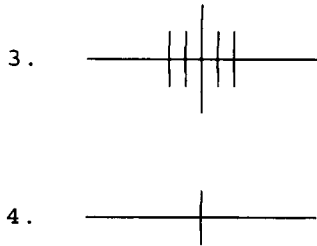
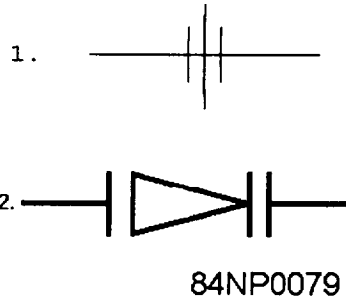
2. 

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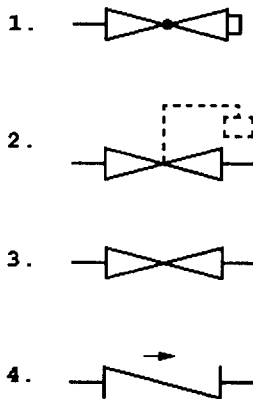
3. 

4. 

7-22. What symbol should you use to show a screwed union in a piping plan?

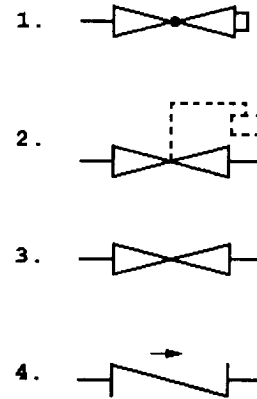


7-23. What valve symbol should you use for a gate valve?



84NP0060

7-24. What valve symbol should you use for a hose valve?



84NP0060

7-25. Which of the following descriptions best defines electrical distribution?

1. The transmission of power from the power plant to the substations
2. The delivery of power from the power plants or substations through feeders and mains to the building premises
3. The interior wiring of a building
4. The overhead power lines that extend from the substations to the buildings

7-26. Most land-based power systems use what type of electrical current?

1. Indirect
2. Direct
3. Alternating
4. Variable

IN ANSWERING QUESTIONS 7-27 and 7-28, REFER TO FIGURE 9-2 IN YOUR TEXTBOOK.

7-27. The installation of a transformer between the primary and secondary main to the motor pool serves what purpose?





1. To reduce voltage
2. To increase voltage
3. To increase current flow
4. To act as a safety device





- 7-28. What voltage is needed to operate the single-phase motor at the motor pool?
1. 110 V
 2. 220 V
 3. 330 V
 4. 440 V
- 7-29. When the voltage remains constant, what happens to amperage when
- (a) resistance is decreased or
 - (b) power consumption is decreased?
1. (a) It increases
(b) it decreases
 2. (a) It decreases
(b) it decreases
 3. (a) It increases
(b) it increases
 4. (a) It decreases
(b) it increases
- 7-30. Which of the following reasons is NOT an advantage of installing electrical distribution systems underground, rather than overhead?
1. Underground installation costs are less
 2. Underground lines are secure against high winds
 3. Underground lines are less susceptible to enemy attack
 4. Underground installation provides open land areas free from distribution systems
- 7-31. Electrical power is brought into a building through what device or conductor?
1. Panel board
 2. Switchboard
 3. Service drop
 4. Service entrance
- 7-32. What electrical device automatically opens a circuit when the amperage exceeds the rated value for that device?
1. Panel box
 2. Circuit breaker
 3. Switch
 4. Disconnect
- 7-33. Compared to a No. 4 AWG conductor, the size of a No. 16 AWG conductor is
1. smaller
 2. equal
 3. larger
- 7-34. What size wire is most frequently used for interior wiring?
1. No. 16 AWG
 2. No. 12 AWG
 3. No. 8 AWG
 4. No. 6 AWG
- 7-35. In which of the following locations is ROMEX NOT authorized for use?
1. Embedded in concrete
 2. In garages
 3. In an explosives storage building
 4. All of the above
- 7-36. Which of the following types of insulation should be used for installation in wet locations?
1. RH
 2. RHW
 3. RUH
 4. Each of the above
- 7-37. Which, if any, of the following types of insulation is considered to be suitable for use in dry locations?
1. RHW
 2. T
 3. TW
 4. None of the above
- 7-38. Instead of manually making a sharp bend in rigid aluminum conduit, which of the following fittings should you use?
1. Coupling
 2. Conduit union
 3. Condulet
 4. Galvanized steel elbow
- 7-39. Which of the following types of conduit can be threaded?
1. Rigid
 2. PVC
 3. EMT
 4. Greenfield
- 7-40. For installing a switch, which of the following outlet boxes should you use?
1. 4-inch octagon box
 2. Gem box
 3. Handy box
 4. 4-inch square box

- 7-41. The National Electrical Code® allows an outlet box to be recessed what maximum distance below the surface of a finished wall?
1. 1/16 inch
 2. 1/8 inch
 3. 1/4 inch
 4. 1/2 inch

- 7-42. A ceiling light is controlled from two locations. To add a third location, which of the following types of switches must you use?
1. Single-pole
 2. Two-pole
 3. Three-way
 4. Four-way

IN ANSWERING QUESTIONS 7-43 THROUGH 7-45, REFER TO APPENDIX IV OF YOUR TEXTBOOK.

- 7-43. When preparing an electrical power distribution plan, which of the following symbols should you use to show aboveground two-conductor primary service lines?
1. 
 2. 
 3. 
 4. 

- 7-44. For interior wiring, which of the following symbols should you use to show a four-conductor circuit installed in a ceiling?
1. 
 2. 
 3. 
 4. 

- 7-45. Which of the following definitions best describes the symbol for a special-purpose receptacle outlet?
1. A circle inscribed in a triangle
 2. A circle containing a smaller inscribed circle
 3. A triangle
 4. A solid triangle inscribed in a circle

- 7-46. In general, construction drawings are categorized according to which of the following factors?
1. The methods used to prepare them
 2. Their intended purpose
 3. The persons who will use them
 4. The persons who prepared them

IN ANSWERING QUESTIONS 7-47 THROUGH 7-50, SELECT THE TYPE OF DRAWING THAT BEST MATCHES THE DESCRIPTION OR PURPOSE GIVEN.

- A. PRESENTATION DRAWING
- B. SHOP DRAWING
- C. WORKING DRAWING
- D. MASTER PLAN DRAWING

- 7-47. This drawing is also known as a project drawing. A set includes general, detail, and assembly drawings.
1. A
 2. B
 3. C
 4. D
- 7-48. This drawing is prepared for minor field work such as a small portable building.
1. A
 2. B
 3. C
 4. D
- 7-49. A perspective drawing showing how a proposed building will appear after it is constructed.
1. A
 2. B
 3. C
 4. D
- 7-50. This drawing is a map used in long-range planning.
1. A
 2. B
 3. C
 4. D
- 7-51. Where in a set of working drawings should you look to find an item that was too small to appear on a foundation plan?
1. General drawings
 2. Detail drawings
 3. Assembly drawings

7-52. Sets of initial working drawings that are provided to a customer for review and approval before completion of the final drawings are known by what name?

1. Presentation
2. Shop
3. Preliminary
4. Concept

7-53. Both red-lined drawings and as-built drawings reflect as-built conditions. What, if anything, is the difference between them?

1. Red-lined drawings are prepared by marking-up a copy of the original drawings during construction, whereas as-built drawings are prepared by making changes to the original (or sepia) drawings during or after project completion
2. Red-lined drawings are prepared by making changes to the original drawings during construction, whereas as-built drawings are made by marking-up a copy of the original drawings after project completion
3. Red-lined drawings are prepared from the as-built drawings
4. There is no difference between red-lined and as-built drawings

IN ANSWERING QUESTIONS 7-54 THROUGH 7-56, SELECT THE PUBLICATION THAT YOU SHOULD USE TO LOCATE THE REQUESTED INFORMATION.

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| <p>A. NAVFAC P-34</p> <p>B. NAVFAC P-272, PART 1</p> <p>C. NAVFAC P-272, PART 2</p> <p>D. NAVFAC P-437</p> |
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7-54. Facility and assembly drawings for pre-engineered structures used by SEABEES at advanced bases.

1. A
2. B
3. C
4. D

7-55. Typical floor plan arrangements provided to an A/E firm preparing project drawings.

1. A
2. B
3. C
4. D

7-56. The crew size required to erect a pre-engineered building assembly.

1. A
2. B
3. c
4. D

7-57. Project drawings are required to have which of the following attributes?

1. They must be complete
2. They must be accurate
3. They must be explicit
4. All of the above

7-58. For NAVFACENGCOM drawings, which of the following title block formats is prescribed for use on F-size sheets?

1. Vertical only
2. Horizontal only
3. Vertical or horizontal

7-59. Because of the likelihood of future size reduction, what information must be prominently placed on all drawings at the time they are prepared?

1. A numeric scale
2. A graphic scale
3. A warning stating the drawing may be reduced in size
4. Both 2 and 3 above

7-60. When performing freehand lettering on an architectural floor plan drawing, you should use (a) what type of lettering and (b) what minimum size lettering?

1. (a) uppercase (b) 0.150 in
2. (a) Lowercase (b) 0.150 in
3. (a) uppercase (b) 0.156 in
4. (a) Lowercase (b) 0.156 in

7-61. As applied to dimensioning and tolerancing of drawings, which of the following statements is NOT correct?

1. Dimensions should not be subject to more than one interpretation
2. When a dimension has a tolerance, the tolerance is always applied directly to the dimension
3. Only those dimensions necessary for complete definition should be shown
4. The use of the reference dimensions should be avoided when possible

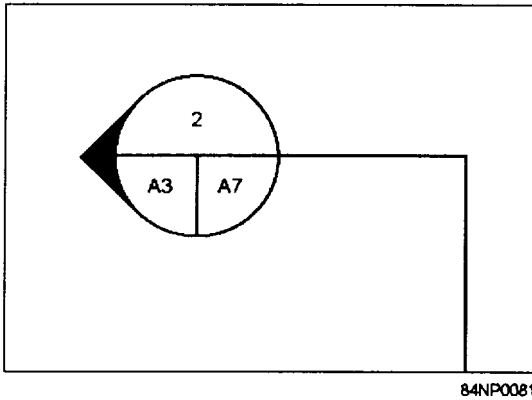


Figure 7A

IN ANSWERING QUESTIONS 7-62 AND 7-63, REFER TO THE WALL SECTION SYMBOL SHOWN IN FIGURE 7A.

- 7-62. What does the numeral "2" indicate?
1. The section number
 2. The sheet number where the section is taken
 3. The sheet number where the section is drawn
- 7-63. What does "A7" indicate?
1. The section number
 2. The sheet number where the section is taken
 3. The sheet number where the section is drawn
- 7-64. When using flat D-size sheets for a set of working drawings, where, on the first sheet of the set, should you place general notes?
1. Three inches below the space provided for the revision block
 2. On the right side of the drawing
 3. On the left side of the drawing
 4. Anywhere that space permits
- 7-65. Of the following functions, which is NOT a function of working drawings in general?
1. To provide a basis for estimating material requirements
 2. To complement the project specifications
 3. To guide and instruct the construction personnel
 4. To specify the type of equipment required during construction
- 7-66. What types of contours should be shown on a site plan drawing?
1. Existing only
 2. Finished only
 3. Existing and finished
- 7-67. On a site plan for a new building, which of the following elevations should be shown for the building?
1. Existing ground
 2. Top of footing
 3. Bottom of footing
 4. Finished floor
- 7-68. At a minimum, when a new building is to be constructed parallel to the property lines, what total number of location dimensions should be shown on the site plan?
1. One
 2. Two
 3. Three
 4. Four or more
- 7-69. In what main division of a set of project drawings for a new building should you look to find the types and sizes of the windows?
1. Civil
 2. Architectural
 3. Structural
 4. Mechanical
- 7-70. To find the size and placement of reinforcing steel in the grade beams for a building, you should look in what main division of the drawings?
1. Civil
 2. Architectural
 3. Structural
 4. Mechanical
- 7-71. In what main division should you look to find the ceiling height of each room in a building?
1. Civil
 2. Architectural
 3. Structural
 4. Mechanical
- 7-72. For construction drawings, the dimension lines are always drawn broken for the insertion of the numerals.
1. True
 2. False

7-73. When dimensioning a floor plan for a CMU building, you should dimension the interior block partitions in which of the following ways?

1. Face to face only
2. Center to center only
3. Face to center
4. Either face to face or center to center, depending upon your preference

7-74. In a set of drawings, a jamb detail provides the best graphical presentation of the framing and trim located above a door.

1. True
2. False

7-75. Which of the following divisions should contain a schedule of air-conditioning equipment used in a building?

1. Architectural
2. Structural
3. Mechanical
4. Plumbing